What is claimed is:

1. An apparatus for removing contaminants from an article to be cleaned in a pressure vessel comprising;

a first zone and a second zone separated by a first thermally insulated baffle, said first zone comprising at least a first heating element adapted to direct a fluid from said first zone to a second zone;

a third zone separated from said second zone by a second thermally insulated baffle, said second zone comprising at least a second heating element adapted to direct said fluid from said second zone to said third zone;

said third zone being separated from a fourth zone by a third thermally insulated baffle, said third zone being adapted to retain said article to be cleaned and comprising at least a third heating element adapted to direct said fluid from said third zone to said fourth zone, said third zone further comprising at least one cooling element and at least a first static baffle adapted to divert at least a portion of said fluid being directed from said fourth zone onto said article to be cleaned, producing a natural convective fluid flow at a rate effective to remove contaminants from said article to be cleaned.

2. The apparatus of claim 1 wherein said first zone is adapted to recover contaminant removed from said article cleaned.

3. The apparatus of claim 1 wherein said third zone further comprises a second static baffle adapted to direct fluid flowing from said article to be cleaned into said second zone.

4. The apparatus of claim 1 wherein said third zone is adapted to separate precipitate from said fluid.

5. The apparatus of claim 2 wherein said third zone further comprises a second static baffle adapted to direct said fourth fluid flow into said second zone.

6. The apparatus of claim 3 wherein said third zone further comprises a second static baffle adapted to direct said fourth fluid flow into said second zone.

7. The apparatus of claim 4 wherein said third zone further comprises a second static baffle adapted to direct said fourth fluid flow into said second zone.

8. The apparatus of claim 1 wherein said fluid is selected from the group consisting of a supercritical fluid and a near supercritical fluid.

9. The apparatus of claim 2 wherein said fluid is selected from the group consisting of a supercritical fluid and a near supercritical fluid.

10. The apparatus of claim 3 wherein said fluid is selected from the group consisting of a supercritical fluid and a near supercritical fluid.

11. The apparatus of claim 4 wherein said fluid is selected from the group consisting of a supercritical fluid and a near supercritical fluid.

12. The apparatus of claim 5 wherein said fluid is selected from the group consisting of a supercritical fluid and a near supercritical fluid.

13. The apparatus of claim 6 wherein said fluid is selected from the group consisting of a supercritical fluid and a near supercritical fluid.

14. The apparatus of claim 7 wherein said fluid is selected from the group consisting of a supercritical fluid and a near supercritical fluid.

15. An apparatus for removing contaminants from an article to be cleaned in a pressure vessel comprising;

a first zone and a second zone separated by a first thermally insulated baffle, said second zone positioned gravitationally upward from said first zone, said first zone comprising at least a first heating element adapted to direct a fluid from said first zone to a second zone;

a third zone separated from said second zone by a second thermally insulated baffle, said third zone positioned gravitationally upward from said second zone, said second zone comprising at least a second heating element adapted to direct said fluid from said second zone to said third zone;

said third zone being separated from a fourth zone by a third thermally insulated baffle, said fourth zone positioned gravitationally upward from said third zone, said third zone being adapted to retain said article to be cleaned and comprising at least a third heating element adapted to direct said fluid from said third zone to said fourth zone, said third zone further comprising at least one cooling element and at least a first static baffle adapted to divert at least a portion of said fluid being directed to said fourth zone onto said article to be cleaned, producing a natural convective fluid flow at a rate effective to remove contaminants from said article to be cleaned.

16. The apparatus of claim 2 wherein

said second zone is positioned gravitationally above said first zone;

said third zone is positioned gravitationally above said second zone; and,

said fourth zone is positioned gravitationally above said third zone.

17. An apparatus for removing contaminants from an article to be cleaned in a pressure vessel comprising;

a first zone and a second zone separated by a first thermally insulated baffle, said second zone positioned gravitationally upward from said first zone, said first zone comprising at least a first heating element adapted to direct a fluid from said first zone to a second zone;

a third zone separated from said second zone by a second thermally insulated baffle, said third zone positioned gravitationally upward from said second zone, said second zone comprising at least a second heating element adapted to direct said fluid from said second zone to said third zone;

said third zone being separated from a fourth zone by a third thermally insulated baffle, said fourth zone positioned gravitationally upward from said third zone, said third zone being adapted to retain said article to be cleaned and comprising at least a third heating element adapted to direct said fluid from said third zone to said fourth zone, said third zone further comprising at least one cooling element and at least a first static baffle adapted to divert at least a portion of said fluid being directed to said fourth zone onto said article to be cleaned, producing a natural convective fluid flow at a rate effective to remove contaminants from said article to be cleaned, said third zone further comprising a second static baffle adapted to direct fluid flowing from said article to be cleaned into said second zone.

18. The apparatus of claim 4 wherein

said second zone is positioned gravitationally above said first zone;
said third zone is positioned gravitationally above said second zone; and,
said fourth zone is positioned gravitationally above said third zone.

19. The apparatus of claim 5 wherein
said second zone is positioned gravitationally above said first zone;
said third zone is positioned gravitationally above said second zone; and,
said fourth zone is positioned gravitationally above said third zone.

20. The apparatus of claim 6 wherein
said second zone is positioned gravitationally above said first zone;
said third zone is positioned gravitationally above said second zone; and,
said fourth zone is positioned gravitationally above said third zone.

21. The apparatus of claim 7 wherein
said second zone is positioned gravitationally above said first zone;
said third zone is positioned gravitationally above said second zone; and,
said fourth zone is positioned gravitationally above said third zone.

22. The apparatus of claim 8 wherein
said second zone is positioned gravitationally above said first zone;
said third zone is positioned gravitationally above said second zone; and,
said fourth zone is positioned gravitationally above said third zone.

23. The apparatus of claim 9 wherein
said second zone is positioned gravitationally above said first zone;
said third zone is positioned gravitationally above said second zone; and,
said fourth zone is positioned gravitationally above said third zone.

24. The apparatus of claim 10 wherein

said second zone is positioned gravitationally above said first zone;

said third zone is positioned gravitationally above said second zone; and,

said fourth zone is positioned gravitationally above said third zone.

25. The apparatus of claim 11 wherein

said second zone is positioned gravitationally above said first zone;

said third zone is positioned gravitationally above said second zone; and,

said fourth zone is positioned gravitationally above said third zone.

26. The apparatus of claim 12 wherein

said second zone is positioned gravitationally above said first zone;

said third zone is positioned gravitationally above said second zone; and,

said fourth zone is positioned gravitationally above said third zone.

27. The apparatus of claim 13 wherein

said second zone is positioned gravitationally above said first zone;

said third zone is positioned gravitationally above said second zone; and,

said fourth zone is positioned gravitationally above said third zone.

28. The apparatus of claim 14 wherein

said second zone is positioned gravitationally above said first zone;

said third zone is positioned gravitationally above said second zone; and,

said fourth zone is positioned gravitationally above said third zone.

29. The apparatus of claim 1 further comprising means for separating precipitate from said fluid.

30. The apparatus of claim 2 further comprising means for separating precipitate from said fluid.

31. The apparatus of claim 3 further comprising means for separating precipitate from said fluid.

32. The apparatus of claim 4 wherein said third zone comprises means for separating precipitate from said fluid.

33. The apparatus of claim 5 further comprising means for separating precipitate from said fluid.

34. The apparatus of claim 6 further comprising means for separating precipitate from said fluid.

35. The apparatus of claim 7 wherein said third zone comprises means for separating precipitate from said fluid.

36. The apparatus of claim 8 further comprising means for separating precipitate from said fluid.

37. The apparatus of claim 14 further comprising means for separating precipitate from said fluid.

38. The apparatus of claim 15 further comprising means for separating precipitate from said fluid.

39. The apparatus of claim 21 further comprising means for separating precipitate from said fluid.

40. The apparatus of claim 28 further comprising means for separating precipitate from said fluid.

41. The apparatus of claim 1 further comprising one or more additional zones separated by additional thermal insulating baffles and comprising at least an additional heating or cooling element adapted to produce a natural convective fluid flow at a rate effective to remove contaminants from said article to be cleaned.